In 1967, Kleinfeld et al (660) reported the mortality pattern for 152 asbestos workers in New York State, who had 15 or more years of asbestos exposure by 1945 or had achieved 15 years of exposure to asbestos dust between 1945 and 1965. The observed mortality rates compared to those reported by Selikoff et al were as follows:

CAUSE OF DEATH	NEW YORK STATE NUMBER	%	NEW YORK-NEW JERSEY NUMBER	%
All deaths	46	100.0%	255	100%
All malignancies		50.0%		37%
Lung & pleural malignancies		26.1%		18%
Gastrointestinal & peritoneum		15.2%		11%
All other malignancies		8.7%		...
Cardiac deaths (other than cor pulmonale)		28.3%		...
Asbestosis & complications		4.3%		4%
Residual causes		13.1%		...

In the above mentioned pulication of Kleinfeld et al (660) as well as in subsequent publications (661, 662) appearing respectively in 1968 and 1973, the authors did not mention the asbestos/smoking interaction. Other articles by Kleinfeld relating to asbestos mining are discussed below [Category 339].

[333] Plumbers and Pipefitters Reported by NIOSH Epidemiologists

In 1976, the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industries

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requested NIOSH to conduct a mortality study of its members. The Union made its computerized death benefit record of 30468 death benefits claimed from 1968 to 1975 available to the NIOSH epidemiologist (663). This represented 10 percent of 330000 members of the union and is 17.8 times larger than the union membership used by Selikoff et al. The proportional mortality ratios (PMRs) for male plumbers and pipefitters combined, and for plumbers only, were as follows:

CAUSE OF DEATH	PMRs PLUMBERS & PIPEFITTERS	PMRs PLUMBERS
All causes	1.00	1.00
All malignancies	1.13	1.27
Digestive organs & peritoneum	1.07	1.25
Esophageal cancer	1.55	2.75
Lung, bronchus & trachea cancer	1.22	1.29

While significant excesses were found for the study group as a whole, these excesses appear to be confined to those union members who were plumbers by trade. Since plumbers, pipefitters and insulators are likely to work together, a question whether common chemical hazards exist needs to be raised. It is also possible that asbestos used by insulators influence plumbers, and vice versa for soldering fumes.

[334] Boilermakers Reported by University of Washington Epidemiologists

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